

1/2 025  
UNCLASSIFIED  
PROCESSING DATE--20NOV70  
TITLE--GENERALIZED CHARACTERISTICS OF AN ELECTRIC ARC DC HYDROGEN HEATER  
-U-  
AUTHOR--(05)-ZHUKOV, M.F., SUKHININ, YU.I., MALKOV, YU.P., VOROB'YEVA, N.I.,  
MUKHC, G.S.  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIYA NAUK SSSR, SIBIRSKOE OTDELENIE, IZVESTIYA, SERIYA  
TEKHNIЧЕСКИХ НАУК, FEB. 1970, P. 30-34  
DATE PUBLISHED--70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--ELECTRIC ARC, DIRECT CURRENT, AIR HEATER, HYDROGEN, COPPER,  
TUNGSTEN, CATHODE, ANODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/1272

STEP NO--UR/0288/70/000/000/0030/0034

CIRC ACCESSION NO--AP0124923

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NDV70

2/2 025

CIRC ACCESSION NO--AP0124923

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SURVEY OF THE RESULTS OF INVESTIGATIONS OF THE ELECTRIC, THERMAL, AND EROSION CHARACTERISTICS OF A SINGLE CHAMBER ELECTRIC ARC HYDROGEN HEATER. IT IS SHOWN EXPERIMENTALLY THAT A LAMINAR COPPER TUNGSTEN OUTPUT ANODE HAS HIGH EROSION STABILITY DURING OPERATION IN A HYDROGEN MEDIUM AND A LONG SERVICE LIFE. IT IS CONCLUDED THAT THE USE OF A COPPER TUNGSTEN CATHODE AND ANODE CAN ENSURE LONG LASTING SINGLE CHAMBER HYDROGEN PLASMATRONS WITH GAS VORTEX STABILIZATION OF HIGH POWER ELECTRIC ARCS.

FACILITY: AKADEMIYA NAUK SSSR, INSTITUT TEORETICHESKOI I PRIKLADNOI MEKHANIKI, NOVOSIBIRSK, USSR.

UNCLASSIFIED

Epidemiology

USSR

UDC 616.981.717-036.22(477)

ZATULOVSKIY, B. G., SHKOL'NIK, L. YA., ANISHCHENKO, G. A., MUKHOMEDOV, V. A., and FOMBERG, M. M., Kiev Institute of Epidemiology, Microbiology, and Parasitology, Donetskaya Oblast Sanitary Epidemiological Station, and Donetskii Medical Institute

"Vesicular Rickettsiosis in the Ukrainian SSR"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, pp 124-128

Abstract: Since the outbreak of vesicular rickettsiosis in Donetskaya Oblast in 1948-1950, with the peak number of 394 rickettsiosis patients recorded in 1950, comprehensive therapeutic and preventive measures have been applied and epidemiological, clinical, etiological, and laboratory data regularly recorded. Statistical analysis of the data indicates a steady decline in the frequency of the disease to 189 cases in 1955, 41 in 1960, 6 in 1964, 3 in 1968, and none in 1969 and 1970. According to serological tests performed on a large number of healthy individuals and patients with various febrile diseases, there are no population contingents with immunity to vesicular rickettsiosis, suggesting that the number of undiagnosed cases is small if not zero. Surveys performed in Zhitomir, Kiev, and a number of regions in Kiev Oblast indicate absence of rickettsiosis in those areas.

1/1

USSR

UDC: 632.95

MUKHOPAD, Ye. A.

"Accumulation of Chlorophos in Vegetation When Aircraft are Used for Treating Forests"

V sb. Gigiyena primeneniya, toksikol. pestitsidov i klinika otravl. (Pesticides -- Safety Measures in Using, Toxicology, and the Poison Clinic--collection of works), vyp. 9, Kiev, 1971, pp 92-97 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7N578)

Translation: Immediately after spraying oak forests with chlorophos in late April in the Rostovskaya Oblast at a rate of 2 kg of active agent in 30 liters of water per hectare, chlorophos was found on aluminum plates lying horizontally, on the ground, and in open areas in quantities of 13 mg/sq. m. and at a distance of up to 400 m from the sprayed forest in amounts of 2-4 mg/sq. m. In the upper layer of the forest floor and on the grass, the amount of chlorophos in the first two days was 3-20 and 0.25-5 mg/sq. respectively, decreasing to 0.5 and 0.15 mg/kg after 15 days. No deaths of birds or animals from the insecticide were noted through the entire course of the experiment, which lasted for 20 days. P. V. Popov.

1/1

USSR

MUKHOPAD, Yu. M.

"Method of Structural Planning of Specialized Computers"

Vychisl. Tekhnika [Computer Technology -- Collection of Works], No 2, Leningrad, Energiya Press, 1972, pp 104-112 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V614, by the author).

Translation: Recommendations are presented for a transition from analytic dependences to a set of functional converters and a control device for them. The iterative performance of seven stages is looked upon as one possible method of engineering planning of structural systems for specialized computers. A brief review is presented of the state of each stage, and a solution is suggested for individual problems for most planning stage.

UDC 539.126

USSR

SAN'KO, L. A., RUS'KINA, G. Ya., ~~MUKHORDOVA, T. I.~~, TAKIBAYEV,  
Zh. S., BOOS, E. G.

"Methods of Determining Background Noise"

Alma-Ata, Izvestiya AN Kazakhskoy SSR -- Seriya Fiziko-Matemati-  
cheskaya, No 6, Nov-Dec 71, pp 6-12

Abstract: An important problem in the analysis of interactions in high-energy situations is the determination of background noise distributions of the effective masses of the particles involved. This paper discusses a method for computing noise distributions, based on experimental data for the angles and impulses of the particles, and demonstrates the possibility of determining the noise by various methods of particle combinations and the formation of known nonresonance combinations. Also examined is the effect of small dip angles of the particles on the form of the noise distribution, information which is essential in the study of particle interactions in nuclear photoemulsions. To investigate all aspects of the method, the authors used random stars modeled at energy levels of 10 Gev and experimental

1/2

-USSR

SAN'KO, L. A., Izvestiya AN Kazakhskoy SSR -- Seriya Fiziko-  
Matematicheskaya, No 6, Nov-Dec 71, pp 6-12

data of particle angles and energies from four-ray events recorded  
in nuclear emulsion at an energy level of 20 Gev.

2/2

- 98 -

USSR

UDC: None

3

TAKIBAYEV, Zh. S., BOOS, E. G., SAN'KO, L. A., MUKHORDOVA, T. I.,  
MOSIYENKO, A. M., ZAYTSEV, K. G., and SHARAPOV, K. V., Institute  
of High-Energy Physics, Kazakhstan Academy of Sciences

"Studying Four-Beam pp-Interactions at pulses of 19.1 GeV/s"

Moscow, Yadernaya Fizika, vol 16, No 5, 1972, pp 974-982

Abstract: The purpose of the present paper is to study the general dynamic characteristics of secondary particles from four-beam proton-proton interactions, such as pulse and angle distributions, inelasticity, and correlation between nucleons, at primary pulses of 19.1 GeV/s. A comparison of the experimental and theoretical results is also made. The difference between the approach taken by the experiments of this paper and that of earlier work in the same direction is that the present paper takes into account information regarding the nature of the charged particles obtained by direct measurements of the ionization loss density. The experiments involved observations in a two-meter waveguide of a bubble chamber irradiated by protons with a pulse of  $19.1 \pm 0.1$  GeV/s, in which 17,700 events were recorded and 11,000 interactions were

1/2



USSR

UDC: None

TAKIBAYEV, Zh. S., et al, Yadernaya fizika, vol 16, No 5, 1972, pp 974-982

selected for measurement. A table is given of various methods of obtaining experimental data and the corresponding results. Comparison of the theoretical and experimental results indicates that the multiperipheral model on which the former is based shows closer agreement with the experimental distribution of inelastic pp interaction, depending on the number of secondary charged particles. The authors express their appreciation to the Committee on Track Chambers of CERN, workers in the Laboratory of Elementary Particles, the Division of Computer Techniques, and the Mathematical Physics Laboratory of the IFVE [Institute of High-Energy Physics] of the Kazakhstan Academy of Sciences, as well as the LVTA Laboratory of the Joint Institute of Nuclear Research.

2/2

- 56 -

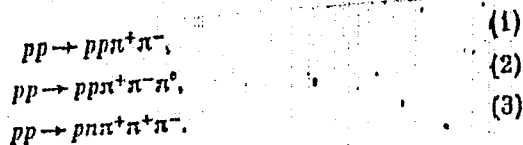
USSR

TAKIBAYEV, ZH. S., BOOS, E. G., SAN'KO, L. A., TEMIRALIYEV, T.,  
ANTONOVA, M. G., YERMILOVA, D. I., MUKHORDOVA, T. I., KHELMET-  
SKAYA, A. V., and FEDOSEYENKO, V. V., Institute of Nuclear Phys-  
ics, Academy of Sciences Kazakh SSR

"Study of Dynamics of Resonance Production in Four-Track Proton-  
Proton Interactions at Momentum of 10 GeV/c"

Moscow, Yadernaya Fizika, Vol 13, No 1, 1971, pp 113-123

Abstract: The article gives an analysis of 1800 four-track  
proton-proton interactions recorded in an 81-cm Saclay hydrogen  
bubble chamber irradiated with protons with a momentum of  $10.01 \pm$   
 $0.01$  GeV/c on the CERN synchrotron. The following reactions are  
considered:



1/2

.. 69 -

USSR

TAKIBAYEV, ZH. S., et al., Yadernaya Fizika, Vol 13, No 1, 1971, pp 113-123

Nucleon and meson resonance production cross-sections are determined and the contribution of two-particle reactions studied. It is shown that pion production in all the channels considered is accompanied in most cases by nucleon resonance production. The contribution of boson resonances, which is greatest in the channel with  $\pi^0$  meson production, does not exceed 10 percent of the reaction channel cross-section. The use of the maximum momentum method permits estimates of the cross-sections for different quasi-two-particle reactions. The cross-sections of the dynamic states being observed differ considerably in channels (2) and (3), where the number of pions and nucleons coincides. This may be due to changes in the nucleon charge in inelastic pp interactions.

2/2

USSR

MIKHORINA, K. V.

"The Action of Maleic Acid Hydrazide on Living Organisms"

V sb. Gidrazid Maleinovoy Kisloty kak Regulyator Rosta Rast. (Maleic Acid Hydrazide as a Regulator of the Animals' Growth), Moscow, "Nauka", 1973, pp 318-332 (from RZh - Biologicheskaya Khimiya, No 22, Nov 73, Abstract No 2056)

Translation: In acute and chronic experiments on various types of animals (rats, mice, rabbits, dogs) the toxicity and blastomogenic action of maleic acid hydrazide was studied (GMK-D; 30% concentrate), as well as of the potatoe treated with it, and the toxic action of GMK-Na (80% preparation). The LD<sub>100</sub> and LD<sub>50</sub> have been determined for GMK-D to be 1 and 0.7 g/kg respectively. Experiments on mice lasting 27 months showed that GMK-D has no carcinogenic activity. GMK-Na is weakly toxic and shows no cumulative action; it is to be preferred to the GMK-D in application to the agricultural problems.

1/1

USSR

PUSTOVOYT, V. I. and MUKHOTOV, Yu. P.

"Theory of Acoustical Wave Generation in a Magnetic Field"

Leningrad, Fizika Tverdogo Tela, vol. 13, No. 10, October 1971,  
pp 3059-3069

Abstract: In this discussion of the ultrasonic movement of carriers in semiconductors resulting in the amplification or spontaneous generation of acoustical waves, the authors use the solution of the kinetic equation for phonons to find the spectral and angular distribution of the acoustical waves, and they demonstrate that the directional diagram of phonon radiation in a strong magnetic field is sharply compressed in the plane perpendicular to the field. This sensitivity of the directional diagram to the field is especially interesting, since the behavior of the crystal under external electric and magnetic fields is primarily a function of the spatial and angular distribution of the generated phonons. It is also shown that the thermodynamic theory of fluctuations can be used with the kinetic equation for finding the sources of the phonons. Finally, the authors show that in a semiconductor with anisotropic interaction in a strong electric field when phonons are generated, an eddy current and a magnetic moment result.

1/1

USSR

UDC 591.044

PIRUZYAN, L. A., BARSEGYAN, L. Kh., MUKHORTOVA, O. M.,  
SAVCHENKO, G. S., and CHIBRIKIN, V. M., Institute of Chemical  
Physics, Academy of Sciences USSR

"Effect of a Permanent Magnetic Field on the Concentration of  
Free Radicals in Mouse Organs and Tissues"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya,  
No 1, 1971, pp 128-132

Abstract: Exposure of mice to a permanent magnetic field (500  
oersteds) for 4, 24, and 72 hours resulted in a marked decrease  
in the free radical content of the liver, spleen, kidneys, muscles,  
heart, and spleen (but not the brain). The low point, reached  
2 to 7 days after the action was halted, varied with the organ  
and length of exposure, ranging from 28 to 55% of the control  
level. The normal concentration of free radicals was restored  
during the ensuing days. The maximum decrease in relation to  
the length of exposure up to 3 days was directly proportional to  
the square root of the exposure time, i.e., the effect of the  
1/2

USSR

PERUZYAN, L. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 128-132

magnetic field was not enhanced by increased exposure of up to 72 hours.. Three days' exposure markedly increased the weight of the spleen but not that of the liver or kidneys. (The weight of the spleen remained abnormally high even on day 25, while the content of free radicals in the organ reached the normal level by day 20).. Histological examination of the liver and kidneys revealed protein degeneration, impairment of the cytoplasmatic structure, and redistribution of the cytoplasm toward the nuclear and cellular membranes.

2/2

USSR

UDC 546

MATEROVA, Ye. A., NIKOL'SKIY, B. P., Academician, MUKHOVIKOV, V. V., Lenin-grad State University imeni A. A. Zhdanov

"Complex Formation in a Liquid Cation Exchanger"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 2, pp 357-360

Abstract: The authors examine the results of an experimental study of equilibrium for systems of the liquid cation exchanger type (dioctyl phosphoric acid in chlorobenzene) and aqueous solutions of  $\text{HCl-CaCl}_2$ ,  $\text{HCl-SrCl}_2$ ,  $\text{HCl-BaCl}_2$ . The  $\text{M}^{2+}\text{-H}^+$  exchange between aqueous and organic solutions is considered --  $\text{MR}_2 + \text{H}^+ \rightleftharpoons \text{H}_2\text{R}_2 + \text{M}^{2+}$ , where  $\text{R}^-$  is the organo-phosphorus anion, and  $\text{M}^{2+}$  is the symbol for ions  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ . Experiments are done to determine the part played by complexing between the molecules of organic acid  $\text{H}_2\text{R}_2$  and salt  $\text{MR}_2$ . The results show high selectivity of the organic phase for hydrogen ions.

1/1



1/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--RADIATION SCATTERING OF NEUTRINOS BY LEPTONS -U-  
AUTHOR--(03)-MUKHTAROV, A.I., NADZHAFOV, I.M., ABDULLAYEV, S.K.  
COUNTRY OF INFO--USSR M  
SOURCE--IZV. VYSSH. UCHES. ZAVED., FIZ. 1970, 13(4), 69-73  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--SCATTERING CROSS SECTION, PARTICLE INTERACTION, NEUTRINO,  
ELECTRON INTERACTION, ANGULAR DISTRIBUTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/1647 STEP NO--UR/0139/70/013/004/0069/0073  
CIRC ACCESSION NO--AT0133552  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0133552

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RADIATION SCATTERING IS  
THEORETICALLY STUDIED OF NEUTRINOS BY LEPTONS (NAMELY E PRIME NEGATIVE),  
THE POLARIZATION OF PARTICLES BEING TAKEN INTO ACCOUNT. EXPLICIT  
EQUATIONS ARE FOUND FOR DIFFERENTIAL CROSS SECTION OF THE SCATTERING  
PROCESS, ANGULAR AND ENERGY DISTRIBUTION OF E, AND DEGREE OF BOTH  
CIRCULAR AND LINEAR POLARIZATION OF GAMMA-QUANTUM. FACILITY:  
AZERB. GOSUNIV. IM. KIROVA, BAKU, USSR.

UNCLASSIFIED

USSR

ABDULLAYEV, S. K., MUKHTAROV, A. I., and NADZHAFOV, I. M., Azerbaydzhan State University

"Photon Emission in Hadron Pair Production in Colliding Electron-Positron Beams"

Moscow, Yadernaya Fizika, Vol 14, No 3, 1971, pp 655-660

Abstract: The annihilation of an arbitrarily polarized  $e^-e^+$ -pair in a pair of hadrons accompanied by polarized photon emission is studied. Plots corresponding to photon emission by initial leptons are considered. Even though photon emission by the created hadrons can make some contribution to the cross-section for a certain region of kinematic variables, the principal contribution is that of photon emission by light initial particles. The coefficient of asymmetry, defined as the ratio of the difference of cross-sections to their sum for parallel ( $\gamma\gamma' = 1$ ) and antiparallel ( $\gamma\gamma' = -1$ ) transverse spins of electron and positron, was derived. The degree of circular polarization of gamma-quanta was also presented.

1/1

- 86 -

2

USSR

UDC 747.341.139.31 + 547.391

PUDOVIK, A. N., BATYYEVA, E. S., IL'YASOV, A. V., NESTERENKO, V. D.,  
MUKHTAROV, A. Sh., and ANOSHINA, N. P.

"Reactions of Trivalent Phosphorus Acid Amides With p-Quinones"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1451-1456

Abstract: Reaction of N-acetamides of dialkylphosphorous acids with p-quinones has been studied. Analogously to N-arylamidophosphites the N-acetamidophosphites react easily with p-benzoquinone, chloranil, and  $\alpha$ -naphthoquinone forming crystalline addition products -- O,O-dialkyl O-p-hydroxyaryl N-acetamidophosphates. Using the EPR method, the possibility of a single electron transfer in the reactions of trivalent phosphorus acid amides with p-quinones was demonstrated going through an intermediate ion-radical formation.

1/1

USSR

UDC 541.13:541.515:543.422.27

IL'YASOV, A. V., KARGIN, YU. M., MOROZOVA, I. D., CHERNOKAL'SKIY, B. D.,  
VAFINA, A. A., MEL'NIKOV, B. V., GEL'FOND, A. S., MUKHTAROV, A. Sh., and  
GALYAMETDINOV, YU. G., Institute of Organic and Physical Chemistry Imeni A. Ye.  
Arbuzov, Acad. Sc. USSR, and Kazan' Chemical-Technological Institute Imeni S. M.  
Kirov

"Electrochemically Generated Free Radicals. 9 Communication. Reduction of Some  
Nitrophenylarsine Derivatives and EPR Spectra of Their Anion Radicals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72,  
pp 2174-2178

Abstract: The mechanism of polarographic reduction of nitrophenyldiethylarsines  
and their oxides and sulfides in an aprotic medium was studied. These compounds  
exhibit two reduction waves, the first one corresponding to a one-electron wave,  
the process being reversible. The second wave is typical of a 3e-process. A  
diagram for the sequential chemical processes of these compounds after the  
capture of second electron has been proposed. Both waves represent a stepwise  
oxidation of the unstable dianion of the substituted nitrobenzene; the phenyl  
ring -- arsenic system remains untouched in this process. Novel organoarsine  
anion radicals have been obtained by electrochemical reduction and studied by  
the EPR method. Delocalization of the unpaired electron in these anion  
1/2

USSR

IL'YASOV, A. V., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2174-2178

radicals has been investigated analyzing possible reasons for a considerable decrease of the spin density on the arsenic atom during the transition from tetracoordinated arsenic atom of the anion radicals to a tri-coordinated one.

2/2

USSR

UDC 621.375.82

KLINKOV, V. K., and MUKHTAROV, CH. K.

"Disruption of Oscillation in Lasers Due to Redistribution of Energy in Resonator. Oscillation of Ruby Laser With Moving Selector"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2(14), Moscow, "Sov. Radio," 1973, pp 61-64 (English summary) (from RZh-Fizika, No 10, Oct 73, Abstract No 10D830 from authors' abstract)

Translation: The article studies the behavior of induced radiation in a laser with flat external mirrors during deep modulation of the oscillation threshold as a result of redistribution of the energy in the resonator. It is shown that monotonic migration of the internal dielectric boundaries leads to periodic disruptions of the oscillation in each mode and to multi-mode oscillation. In real lasers migrations of the dielectric boundaries are due to heating of the active medium, its vibrations, etc. All this substantially affects the spectral kinetics of free oscillation. The effect of the energy redistribution mechanism on oscillation is traced experimentally in a ruby laser. Bibliography with nine titles.

1/1

- 45 -

USSR

UDC 621.372.8

MUKHTAROV, I. N. and NILOVSKIY, V. T.

"Broadband Waveguide Three-Port Circulator"

Moscow, Antenny, No. 10, 1971, pp 74-81

Abstract: The operating band of the classical three-port, or Y circulator does not exceed 10%. The purpose of the present article is to realize a circulator on this model, but with a larger band, by introducing a gap into the ferrite element along the height of the waveguide joint, as well as a sleeve. The effect of this is to optimize the dielectric parameters of the element. It is shown that in T circulators, which are preferable to the Y type from the miniaturization point of view, the use of ferrite dielectric elements optimized by the method described in this article not only is deprived of its electrical asymmetry but also achieves a widened band. Experiments performed on both the Y and T circulators developed by the authors are described. They showed that the band width of the circulators can be substantially increased without substantially complicating their structures, and is at least three times wider than the value regarded in the literature as limiting.

1/1



USSR

UDC: 621.372.832.8

MUKHTAROV, I. N., NILOVSKIY, V. T.

"Wide-Band Waveguide Y-Circulators"

V sb. Antenny (Antennas--collection of works), vyp. 10, Moscow, "Svyaz(", 1971, pp 74-81 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B143)

Translation: The paper describes a method of considerably extending the working range of frequencies of a waveguide H-plane Y-circulator of conventional design with a dielectric sleeve over a ferrite cylinder; a Y-circulator for the centimeter band made by this method has a 30 percent band. Data are given from research and development of a waveguide H-plane T-circulator with the same band. Seven illustrations, one table, bibliography of eight titles. Resumé.

Pharmacology and Toxicology

USSR

UDC 615.28.015.45:[612.452.018+612.826.4

KOSTYUK, O. T. and MUKHTAROVA, N. D., Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics

"Catecholamines and Hypothalamic Function Following Exposure to Organochlorine and Organophosphorus Pesticides"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 5, 1970, pp 35-38

Abstract: The epinephrine and norepinephrine content of the daily urine was studied in 53 persons engaged in aerial spraying of DDT, chlorophos, etc. for 1 to 10 years or more. It was found that the longer the period of exposure, and the closer the contact with chemicals, and the deeper the involvement of the autonomic nervous system and the degree of diencephalopathy, the higher the level of epinephrine excretion and the lower the level of norepinephrine excretion with the daily urine. Fluctuations in the amount of catecholamines excreted corresponded to the clinical manifestations of nervous system pathology; shifts were greatest in those suffering from diencephalic disorders. Catecholamine metabolism returned to normal after treatment.

1/1

USSR

UDC 616.132.4-007.271-008.6-02:615.235.7:546.49

MUKHTAROVA, N. D., Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

"Takayashi Syndrome in Chronic Granosan Poisoning"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 9, Sep 70, pp 27-31

Abstract: Three cases are described which indicate that poisoning with heavy metals, particularly organomercury compounds, can be included with syphilis, rheumatic fever and atherosclerosis as factors capable of causing Takayashi syndrome (arterial insufficiency of the brain, eyes, and arms following the development of chronic obliterating infectious-allergic periarteritis nodosa, chiefly in the large blood vessels branching off from the aorta). All three patients had come into contact with granosan (ethyl mercuric chloride), a disinfectant used primarily to treat seeds. All complained of weakness and numbness in the left arm, headaches, vertigo, excessive thirst, polyuria, fear of death, sense of suffocation, tachycardia, and other symptoms of diencephalic pathology. Administration of unithiol (a specific antidote for arsenic and mercury poisoning), combined with tonics and physical therapy, brought about marked improvement, including restoration of vascular patency.

1/1

1/2 034 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--CATECHOLAMINES AND HYPOTHALAMIC FUNCTION UNDER THE EFFECT OF AN  
ORGANOCHLOROUS AND ORGANOPHOSPHORUS PESTICIDES COMPLEX -U-  
AUTHOR-(02)-KOSTYUK, O.T., MUKHTAROVA, N.D. *M*

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYE ZABOLEVANIYA, 1970, NR 5, PP

35-38  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ORGANIC PHOSPHORUS COMPOUND,  
PESTICIDE, NERVOUS SYSTEM, PATHOLOGY, CATECHOLAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/0583

STEP NO--UR/0391/70/000/005/0035/0038

CIRC ACCESSION NO--AP0116181

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116181

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIURNAL EXCRETION OF CATECHOLAMINES AND THE STATE OF NERVOUS SYSTEM WERE EXAMINED IN 53 PERSONS WITH A VIEW TO AN EARLY DIAGNOSIS OF A POSSIBLE PATHOLOGICAL EFFECT PRODUCED BY A COMPLEX OF ORGANOCHLOROUS AND ORGANOPHOSPHORUS PESTICIDES. THE PROPORTIONS OF CATECHOLAMINES (EPINEPHRINE AND NOREPINEPHRINE) VARIED DEPENDING UPON THE DURATION AND INTENSITY OF EXPOSURE TO PESTICIDES, AND ALSO UPON THE EXTENT OF THE NERVOUS SYSTEM INVOLVEMENT. A STATISTICALLY SIGNIFICANT DROP IN NOREPINEPHRINE AND A RISE IN EPINEPHRINE WERE OBSERVED TO OCCUR IN CASES OF DIENTEPHALOPATHY.

FACILITY: INSTITUT FIGIYENY I TOKSIKOLOGII PESTITSIDOV,  
POLIMERNYKH I PLASTICHESKIKH MASS.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--VAPOR PHASE OXIDATION OF 4,5-DIMETHYLPHTHALIC ANHYDRIDE -U-  
AUTHOR-(04)-SHARIPOV, A.KH., MUKHTARULLINA, F.A., BEKSHENEVA, N.M.,  
KHABIBULLIN, M.F.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 715-17  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--GAS STATE, OXIDATION, PHTHALIC ANHYDRIDE, VANADIUM OXIDE,  
MALEIC ANHYDRIDE, PYROMELLITIC ACID, ANHYDRIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/1462 STEP NO--UR/0080/70/043/003/0715/0717  
CIRC ACCESSION NO--AP0116899  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 020

CIRC ACCESSION NO--AP0116899

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER OPTIMUM CONDITIONS DETD.  
WITH FUSED V SUB2 O SUB5 PARTICLES IN A CONTINUOUS REACTOR,  
4,5-DIMETHYLPHTHALIC ANHYDRIDE (I) WITH 58-74 PARTS BY WT. OF AIR AT  
430-40DEGREES AND A VOL. RATE OF THE I VAPOR AIR MIXT. OF 5500-5700 HR  
PRIME NEGATIVE1 GIVES 58PERCENT PYROMELLITIC ANHYDRIDE BASED ON I ADDED  
AND 90PERCENT BASED ON I CONSUMED. OTHER PRODUCTS ARE MALEIC ANHYDRIDE  
AND CO SUB2.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--INTENSITY OF SPREADING OF DIPHTHERIAL BACTERIOCARRIER IN RELATION  
TO CONDITIONS AND DURATION OF POPULATION COMMUNICATION -U-  
AUTHOR--(C3)-KHISAMUTDINGV, A.G., RUZAL, G.I., MUKHUTDINGV, I.A.  
COUNTRY OF INFO--USSR  
SOURCE--KAZAN MED ZH 1. 52-53. 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DIPHTHERIA, DISEASE INCIDENCE, DISEASE CONTROL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO-----ED70/605014/C07 STEP NO--UR/0392/70/001/000/0052/0053  
CIRC ACCESSION NO--APC140477  
UNCLASSIFIED



UNCLASSIFIED

PROCESSING DATE---11DEC70

2/2 017

CIRC ACCESSION NO--AP0140477

ABSTRACT/EXTRACT---(U) GP-0-

ABSTRACT. SPREADING DIPHTHERIA BACILLI AMONG STUDENTS OF BOARDING AND REGULAR SCHOOLS WAS STUDIED. CONDITIONS AND DURATION OF COMMUNICATION OF THE POPULATION, DETERMINED BY THE TYPE OF SCHOOL, SHOWED DIRECT EFFECT ON SPREAD INTENSITY OF THE DIPHTHERIA PATHOGEN. DIPHTHERIA CIRCULATION WAS HIGHER AMONG THE STUDENTS OF BOARDING SCHOOLS, IN WHICH CLOSE AND PROLONGED CONTACT AND A COMMON DIET EXISTED.

UNCLASSIFIED

USSR

UDC: 550.834

BRODOV, L. Yu., VEDERNIKOV, G. V., KOCHUGOV, N. A., LUKASHENKO, V. F.,  
MUKHUTDINOV, R. A., "Tatneftegeofizika" Trust

"A Device for Automatic Processing of Seismic Recordings"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraboty, Tovarnyye Znaki,  
No 11, Apr 72, Author's Certificate No 333511, Division G, filed 25 Jan 71,  
published 21 Mar 72, pp 183-184

Translation: This Author's Certificate introduces a device for automatic processing of seismic recordings. The device contains operational drums with the primary information media, readout units, a computer unit, a correction unit and a registration unit. As a distinguishing feature of the patent, in order to suppress regular interference waves and retain the shape of the primary signal, the outputs of the readout units are connected through adders and subtractors, the computer unit and a discriminator to a switching element connected in the registration circuit to connect the output of the subtractor to the correction unit and the registration unit.

1/1

USSR

UDC 627.825.001.8

MUKHUTDINOVA, P. KH., Institute of Mechanics and Seismic Stability of Construction imeni M. T. Urazbayev, Academy of Sciences, Uzbekskoy SSR

"The Choice of a System of Coordinate Functions for the Calculation of Arched Dams by the Dynamic Theory of Elastic Films"

Tashkent, Izvestiya Akademii Nauk, UzSSR, Seriya Tekhnicheskikh Nauk, No 1, 1973, pp 25-28

Abstract: An attempt is made to solve a system of equations for calculating the dynamics of arched dams by thin film theory, using the variation method of Bubnov-Galerkin. Due to the presence of free edges it is not possible to use the beam function usually used for calculating films. An almost orthogonal function is chosen, determined by selected, precisely satisfied boundary conditions and guaranteeing good series convergence.

1/1

Foundry

USSR

UDC 669.71.046.44

RAKHIMOV, A. R., MUKHYMBEKOVA, M. K., ISAKOV, U. I., and  
PONGMAREV, V. D.

"Method of Processing Alumosilicate Slags Obtained During Reduction Smelting of Lisakovskiy Concentrates"

Sb. materialov Vses. seminarov energetikov predriyatiy tsvetn. metallurgii po ekon. elektroenergii (All-Union Seminar of Electrical Engineers of the Enterprises of Non-ferrous Metallurgy on the Question of Economizing on Electrical Power -- collection of transactions), Moscow, 1970, pp 20-28 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G98)

Translation: Alumosilicate slags were smelted from fluxed pellets of magnesium lisakovskiy concentrate. Experiments of sintering the slags with soda were conducted and the optimal conditions of sintering were established. The conditions of decomposition of cakes and the effect of different factors were studied. Experiments were conducted involving combined processing of alumosilicate slags with red slime using the autoclave method, and the feasibility of such a combination was shown.

1/1

2/2

4355

2/2

File # 44-38861-2025

# Cybernetics

29 Feb 72

254

**PYD 079865-03**

[illegible]

Exhibit A JAN 20 1966

SC. FORUM PRESS, INC.

৩৯.১১.১৭৩০

REASON, friends, is not 72. D 3

[illegible]

600

AN0012612

UR 9012

AUTHOR-- MIKIMOV, YU.

TITLE-- LISTENING TO THE BREATHING OF THE EARTH

NEWSPAPER-- PRAVDA, JANUARY 23, 1970, P 6, COLS 1-6

ABSTRACT-- ACCORDING TO V. I. ULOMOV, HEAD OF THE CENTRAL SEISMIC STATION "TASHKENT", THE TASHKENT GEODYNAMIC RANGE OCCUPIES A TERRITORY OF 10,000 SQUARE KILOMETERS AND HAS SIX SEISMIC STATIONS. THE LAST STATION THAT JOINED THE ORGANIZATION WAS THE "YANGIYUL" STATION. PLANS CALL FOR PLACING INTO OPERATION THE SEVENTH STATION, THE "TASHKENT-2". THE GEODYNAMIC RANGE MAINTAINS THE CHINGAN OBSERVATION POST IN THE WESTERN TYAN-SHAN. INSTRUMENTS ARE ALSO MAINTAINED ON THE BANKS OF THE PSKEM RIVER AND AT THE SUKOKSKAYA

1/2

19571499

12

AN0012612

STATION LOCATED IN A GORGE OF THE KURAMINSKIY RIDGE. THE STATIONS OF THE TASHKENT RANGE ARE WATCHFUL FOR THE LEAST CHANGES IN GEO-PHYSICAL FIELDS. THE RESULTS OF THEIR OBSERVATIONS ARE IMMEDIATELY DISPATCHED TO THE CENTRAL TASHKENT SEISMOLOGICAL OBSERVATORY.

A HOLE, 2,500 METERS DEEP, HAS BEEN DRILLED AT THE EPICENTER OF THE LAST TASHKENT EARTHQUAKE AND INSTRUMENTS LOWERED TO ITS BOTTOM. FIRST READINGS HAVE RECENTLY BEEN REPORTED.

EXTENSIVE SEISMIC RESEARCH IS BEING CONDUCTED BY THE INSTITUTE OF SEISMOLOGY ESTABLISHED IN TASHKENT THREE YEARS AGO. IT IS DIRECTED BY ACADEMICIAN GANI ARIKHANOVICH MAVLYANOV. *Sw*

*2/2*

19571500

USSR

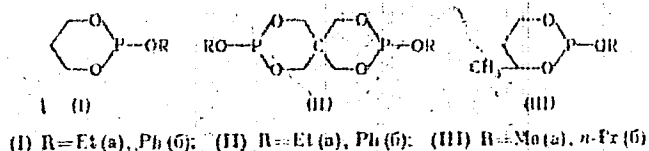
UDC 541.63:541.67:547.1'118:547.8

AR'UZOV, B. A., ARSHINOVA, R. P., VUL'FSON, S. G., MUKMENEV, E. T.

"Steric Structure of Phosphorus-Containing Heterocycles. 4. Axial Arrangement of the Alkoxy Group in 1,3,2-dioxaphosphorinanes by the Dipole Moment Data"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2426-2431

Abstract: A study was made of the conformation of two classes of compounds: 2-alkoxy-1,3,2-dioxaphosphorinanes (I) and the corresponding dialkoxypentaerythridiphosphites (II)



Data are compared on the structure of 1,3,2-dioxaphosphorinanes which are derivatives of trimethylene glycol and 1,3-butylene glycol.

The dipole moments are determined for 2-alkoxy and 2-phenoxy-1,3,2-dioxaphosphorinanes and their spiro analogs with a three-coordinated phosphorus

1/2



USSR

AR'UZOV, B. A., et al., *Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya*, No 11, 1973, pp 2426-2431

atom. A graphical procedure is proposed for the analysis of the dipole moment data for cyclic compounds. In all of the investigated compounds, conformation of the chair configuration with the axial (or diaxial for the spiro compound) arrangement of the alkoxy group with gosh-orientation of the methoxyl and ethoxyl radicals and with cis-orientation of the phenoxy group. The proposed graphical procedure permitted not only establishment of the steric structure of the spirane molecules but also certain conclusions regarding the structure of the corresponding monocyclic molecules.

USSR

UDC 542.91+541.6:547.1'118 ①

ANOSHINA, N. P., GOL'DFARB, E. I., VOSKRESENSKAYA, O. V., KIRPICHNIKOV, P. A.,  
and ~~MIKHEEV~~, E. T., Institute of Organic and Physical Chemistry imeni A. Ye.  
Arbuzov, Academy of Sciences USSR, and Kazan' Institute of Chemical Technology  
imeni S. M. Kirov

"Use of the Arbuzov Reaction to Establish the Structure of Tricyclic D-Mannitol  
Triethyl Triphosphite"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 72, pp  
1390-1395

Abstract: The authors used the Arbuzov reaction to establish the ring size in  
tricyclic D-mannitol triethyl triphosphite. A study was made of the reaction  
with ethyl bromide of tricyclic triethyl triphosphite and phosphites which model  
it, obtained from 1,2; 5,6-di- and 3,4-O-isopropylidene-, as well as 1,3; 4,6-  
di- and 2,5-O-methylene-D-mannitols. Differential thermal analysis and  $^{31}\text{P}$ -NMR  
data indicate that tricyclic D-mannitol triethyl triphosphite represents 2-  
ethoxy-4,5-bis-(2'-ethoxy-1',3',2'-dioxaphospholanyl-4')-1,3,2-dioxaphospholane.

1/1

USSR

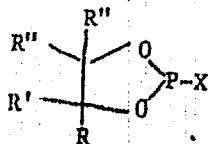
UDC 543.51:547.72:546.183

YEFREMOV, Yu. Ya., MUSIN, R. Z., GURARIY, L. I., and MUKMENEV, E. T.,  
Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy  
of Sciences USSR, Kazan'

"Mass Spectrometric Analysis of Some Five-Membered Phosphite Rings"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1972, pp 1329-1330

Abstract: The 1,3,2-dioxaphospholanes of the following type were studied



For a compound A,  $R = R' = R'' = H$ ,  $X = OC_2H_5$ ; for B,  $R = CH_3$ ,  $R' = R'' = H$ ,  $X = OC_2H_5$ ; for C,  $R = R' = R'' = CH_3$ ,  $X = OC_2H_5$ ; for D,  $R = R' = R'' = H$ ,  $X = OC_6H_5$ ; and E,  $R = R' = R'' = H$ ,  $X = Cl$ . The parent peak  $M^+$  comprised from 2.8% for B to 11.00% for D of the total peak areas. The  $(M - 2)^+$  peak from the loss of  $C_2H_4$  from the ethoxy group was 10% for A, a few %  
1/2

USSR

YEFREMOV, Yu. Ya., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1972, pp 1329-1330

for B and C, and negligible for D & E (the latter not containing the  $-OC_2H_5$  group). The  $(M-45)^+$  peak, i.e., loss of  $-OC_2H_5$ , for A, B, & C, has a value similar to the  $(M-28)^+$  peak. Decreasing the number of methyl groups increases the stability of the ions where X represents an electron or  $X = OH$ . Loss of the "X" group and loss of the alkyl part of the alkoxy group appear to be the main dissociation reactions of these compounds.

2/2

- 46 -

USSR

UDC 547.759.4.07

SHAW, R. A., and BUKMELEV, E. T., Department of Chemistry, J. Barkman College, London University, and the Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy of Sciences, Lazan

"A New Method for the Synthesis of 1,1,3-Triphenyl-1H-Isoindole"

Riga, Khimiya Geterotsiklicheskih Soedineniy, No 7, 1973, pp 945-946

Abstract: 1,1,3-triphenyl-1H-isoindole (I) was obtained by reacting diphenyl ketone with 2,2,4,4,6,6,8,8-octakis-(2,2,2-trifluoroethoxy)-1,3,5,7,2,4,6,8-tetraazatetraphosphocine. Identification of I was based on chemical analysis, melting temperature, and IR, UV, and ESR spectra.

1/1

- 15 -

USSR

UDC 541.951.3:547.1'118:541.62

GUBAYDULLIN, R. N., YEGANOV, V. F., ARSHINOVA, R. P., and MUKHOMEDOV, E. T.,  
Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov Acad. Sc.  
USSR, and Chemical Institute Imeni A. M. Butlerov, Kazan' State University  
Imeni V. I. Ul'yanov-Lenin

"Formation of Isomeric Diphenylpentaerythritol Diphosphites in the Transesteri-  
fication of Triphenyl Phosphite With Pentaerythritol"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, May 73, pp  
1116-1118

Abstract: Using thin layer chromatography, it was shown that the transesterifi-  
cation of triphenyl phosphite with pentaerythritol at 100-120°/10 mm yields  
3,9-diphenoxy-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane, m.p. 118-120°C  
and  $\alpha$ -(2,6,7-trioxa-1-phosphabicyclo[2,2,2]octyl-4)-methyldiphenyl phosphite,  
m.p. 82-84°C. These structures were identified by parallel syntheses.

1/1

- 40 -

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PHOSPHOROUS ACID ESTERS AS COLORLESS STABILIZERS OF LOW PRESSURE  
POLYETHYLENE--U-  
AUTHOR--(05)--KIRPICHNIKOV, P.A., KOLYUBAKINA, N.S., MUKMENEVA, N.A.,  
MUKMENEV, E.I., VORKUNOVA, E.I.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN. SER. 8 1970, 12(3), 189-92  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, CHEMICAL STABILIZER, HETEROCYCLIC  
BASE COMPOUND, POLYETHYLENE, ORGANIC SULFUR COMPOUND, ANTIOXIDANT  
ADDITIVE, SULFIDE, PHENOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0669 STEP NO--UR/0460/70/012/003/0189/0192  
CIRC ACCESSION NO--AP0124341  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT7

CIRC ACCESSION NO--AP0124341

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDN. OF P CONTG. COMPOS., (RO) SUB3 P (R IS ET, BU, HEXYL, NONYL, PH, OR ISO BUC SUB6 H SUB4), I, II, OR III (R PRIME IS ISOOCTYL), TO LOW PRESSURE POLYETHYLENE (IV) ALS CONTG. ANTIOXIDANTS (BIS(5,METHYL, 3,TERT,BUTYL,2,HYDROXYPHENYL) SULFIDE, BIS(5,METHYL,3,TERT,BUTYL,2,HYDROXY) METHANE, OR 2,6 BIS(ALPHA METHYLBENZYL),4,METHYLPHENOL) INHIBITED COLOR FORMATION DURING HEATING IV IN AIR AT 190DEGREES OR 200DEGREES. THE P CONTG. COMPOS. REACTED WITH THE RESIDUAL TI CATALYSTS, PREVENTING THEIR COLOR REACTION WITH TH ANTIOXIDANTS. FACILITY: KAZAN. KHIM. TEKHNOL. INST. IM. KIROVA KAZAN, USSR.

UNCLASSIFIED



USSR

UDC 541.67:547.879

ARBUZOV, B. A., Academician, ARSHINOVA, R. P., GURARIY, L. I., MUKHOMENY, E. T., Scientific Research Institute of Chemistry imeni A. N. Butlerov  
Affiliated with Kazan State University imeni V. I. Ul'yanov-Lenin; Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences of the USSR, Kazan

"Dipole Moments and Kerr Constants of 1,3,2-Dioxaphospholans"

Moscow, Doklady Akademii Nauk SSSR, Vol 204, No 6, 21 Jun 72, pp 1349-1351

Abstract: The paper is a continuation of research on the stereostructure of heterorings. The authors study conformations of a series of 1,3,2-dioxaphospholans with the tricoordinate phosphorus atom. Four compounds of this type were synthesized by reacting ethylene-1,2-propylene, 2-3butylene and 2,3-dimethyl-2, 3-butylene glycols with phosphorus trichloride and alkyl dichlorophosphites. The dipole moments and Kerr constants were measured in an atmosphere of dry argon. The results show that the usual conformation of the 1,3,2-dioxaphospholan ring is distorted by the spatial interaction of methyl groups which takes place in the case of meso-2-chloro-4,5-dimethyl 1,3,2-dioxaphospholan. This explains the contradictory data in the literature with respect to PMR and gas electronography determinations of the stereostructure of these rings. The authors thank A. N. Vereshchlagin and A. G. Vul'fson for assistance with the work. 1/1

USSR

UDC 542.91+541.6:547.1'118

MUKHENEV, E. T., KIRPICHNIKOV, P. A., and VOSKRESENSKAYA, O. V., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR, and Kazan' Institute of Chemical Technology imeni S. M. Kirgov

"Study of the Possibility of the Formation of 7- or 9-Membered Rings in the Molecule of Tricyclic D-Mannitol Triethyl Triphosphite"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 72, pp 1395-1399

Abstract: The authors synthesized model cyclic phosphites based on 1,3; 4,6-di-O-methylene- and 2,5-O-methylene-D-mannitols by the transesterification of triethyl phosphite with the corresponding D-mannitol derivatives. The attempt to synthesize a 7-membered cyclic phosphite based on 1,4-butanediol under the transesterification conditions (110-120°, threefold excess of triethyl phosphite) proved unsuccessful. It was also found impossible to synthesize a 9-membered cyclic phosphite based on 2,3,4,5-di-O-methylene-D-mannitol.

1/1

USSR

UDC 541.124+541.127+661.718.1

CHEBOTAREVA, E. G., POBEDIMSKII, D. G., KOLUBAKINA, N. S., MUKMENEVA, N. A.,  
KIRPICHNIKOU, P. A., AKIMADULLINA, A. G., Kazan Chemical Technology Institute imeni S. M. Kirova

"Kinetics of Reaction of Phosphites With Cumol Hydroperoxide"

Moscow, Russian, Kinetika i kataliz, Vol 14, No 4, Jun-Aug 73, pp 891-895

Abstract: The kinetics were studied and the rate constants determined for the reaction of various aliphatic and aromatic phosphites with cumol hydroperoxide in benzene. The rate constants did not change with a reaction rate change of 4 orders of magnitude, which indicates the absence of kinetic bonds. The reaction was first order with respect to each component. The aromatic phosphites were less reactive than the aliphatic, possibly because of polar effects. Analysis of the data on competition between the phosphite-hydroperoxide reactions and the spontaneous disintegration of hydroperoxides at 200°C in molten polymers indicated that phosphites suppress confluent branching.

1/1

USSR

UDC 547.26\*118

KADYROVA, V. KH., KIRPUCHNIKOV, P. A., ~~MUKOMENOVA, N. A.~~, GREN, G. P., and KOLYUBAKINA, N. S., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"New Thermostable Phosphite Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1688-1691

Abstract: A study of the synthesis of phosphite esters possessing increased hydrolytic and thermal stability showed that such phosphites can be obtained by condensation of various bisphenols with trivalent phosphorus derivatives. The thermostability of the synthesized compounds was studied by the differential thermal analysis method using a derivatograph of the F. PAULIK-J. PAULIK-L. ERDEY System. It was found that thermal decomposition begins only at temperatures above 300°.

1/1

41

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PHOSPHOROUS ACID ESTERS AS COLORLESS STABILIZERS OF LOW PRESSURE  
POLYETHYLENE -U-  
AUTHOR--(05)-KIRPICHNIKOV, P.A., KOLYUBAKINA, N.S., MUKMENEVA, N.A.,  
MUKMENEV, E.T., VORKUNOVA, E.I.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN. SER. B 1970, 12(3), 189-92  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, CHEMICAL STABILIZER, HETEROCYCLIC  
BASE COMPOUND, POLYETHYLENE, ORGANIC SULFUR COMPOUND, ANTIOXIDANT  
ADDITIVE, SULFIDE, PHENOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/0669 STEP NO--UR/0460/70/012/003/0189/0192  
CIRC ACCESSION NO--AP0124341  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT7

CIRC ACCESSION NO--AP0124341

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDN. OF P CONTG. COMPOS., (RO)SUB3 P (R IS ET, BU, HEXYL, NONYL, PH, OR ISO BUC SUB6 H SUB4), I, II, OR III (R PRIME IS ISOCTYL), TO LOW PRESSURE POLYETHYLENE (IV) ALS CONTG. ANTIOXIDANTS (BIS(5,METHYL,3,TERT,BUTYL,2,HYDROXYPHENYL) SULFIDE, BIS(5,METHYL,3,TERT,BUTYL,2,HYDROXY) METHANE, OR 2,6 BIS(ALPHA METHYLBENZYL),4,METHYLPHENOL) INHIBITED COLOR FORMATION DURING HEATING IV IN AIR AT 190DEGREES OR 200DEGREES. THE P CONTG. COMPOS. REACTED WITH THE RESIDUAL TI CATALYSTS, PREVENTING THEIR COLOR REACTION WITH TH ANTIOXIDANTS. FACILITY: KAZAN. KHIM. TEKHNOL. INST. IM. KIROVA KAZAN, USSR.

UNCLASSIFIED

Organophosphorus Compounds

USSR

UDC 547.15:547.451

POBEDIMSKIY, D. G., MUKMENEVA, N. A., and KIRPICHNIKOV, P. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reactions of  $\dot{R}O$ ,  $\dot{RS}$ , and  $\dot{RO}_2$  Radicals With Phosphites and Phosphines"

Moscow, Uspekhi Khimii, Vol 41, No 7, Jul 72, pp 1242-1259

Abstract: A review of studies concerned with detailed mechanism and quantitative laws in the kinetics of  $\dot{R}O$ ,  $\dot{RS}$ , and  $\dot{RO}_2$  radical reactions with phosphites and phosphines is given, citing 49 references from the period 1959-1970. Using the method of radioactive tagging, it was shown that the formation of phosphoranyl radical is an irreversible reaction, this being the first intermediate product in such radical reactions. An analysis has been carried out of the competitive reactions between the addition of  $\dot{R}O$  and  $\dot{RS}$  radicals to the phosphites and phosphines, and other reactions such as splitting of the H atom from hydrocarbons, addition to double bonds, monomolecular decomposition, etc. The last chapter is devoted to the discussion of the mechanism of inhibitory action of aromatic phosphites during thermooxidative destruction of polyolefine in the frame of the concepts on the termination of kinetic oxidation chain reaction by means of the exchange of radicals.

1/1

USSR

UDC 542.91+541.6:547.431.2'118.3

MAKAROVA, N. A., NABIULLIN, V. N., MUKMENOV, E. T., and ARBUZOV, B. A.,  
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of  
Sciences USSR

"The Behavior of 2-Ethoxy-4-chloromethyl-1,3,2-dioxaphospholane on Heating"

Leningrad, Zhurnal Obshchey Khimii, Vol 43, No 11, Nov 73, pp 2373-2378

Abstract: Re-esterification of triethyl phosphite with 1-chloro-1-deoxy-D,L-glycerol (I) led to the formation of 2-ethoxy-4-chloromethyl-1,3,2-dioxaphospholane (II). Study by the methods of gas-liquid chromatography and  $^{31}\text{P}$  nuclear magnetic resonance showed that the cyclic phosphite II consisted of a mixture of a cis- and a trans-isomer with boiling points that were close to each other. The trans-isomer predominated in the mixture. On heating of II for 6 hrs at  $175-90^\circ$ ,  $\text{EtCl}$  was evolved and a P-containing oligomer formed, apparently as a result of an inter-molecular Arbuzov rearrangement. II was also prepared by reacting I with ethyl dichlorophosphite  $\text{EtOPCl}_2$  in the presence of  $\text{NEt}_3$ .

Similarly, the 2-beta-chloroethoxy and 2-isobutoxy analogs of II (III and IV) were synthesized by the reaction of I with  $\text{ClCH}_2\text{CH}_2\text{OPCl}_2$  and  $i\text{-BuOPCl}_2$ , respectively. The 2-phenoxy analog (V) of II was also prepared. The behavior and properties of compounds III-V, including the predominance of the trans-isomer

1/2



USSR

MAKAROVA, N. A., et al., Zhurnal Obshchey Khimii, Vol 43, No 11, Nov 73,  
pp 2373-2378

in them, were consistent with the assumption of an intermolecular rearrangement.  
The authors thank V. V. Pomazanov, N. P. Anoshina, and E. I. Gol'dfarb for  
carrying out instrument measurements.

2/2

- 33 -

USSR.

UDC 547.26.118

VERIZHNIKOV, L. V., VOSKRESENSKAYA, O. V., KADYROVA, V. KH.,  
KIRPICHNIKOV, P. A., MUKHMENOV, E. T., Kazan' Institute of Chemical  
Technology imeni S. M. Kirov and Institute of Organic Chemistry  
imeni A. YE. Arbuzov, Academy of Sciences USSR

"Arbuzov Isomerization of Cyclic Phosphites Containing a Seven-  
or Eight-membered Ring"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2162-  
2164

Abstract: To explore the applicability of the Arbuzov reaction  
to the synthesis of cyclic phosphonates with seven- or eight-  
membered rings, a study was made of the reactions of certain title  
compounds with bromoethane. Heating a cyclic alkyl phosphite,  
e.g., O,O'-diphenyl ethyl phosphite, with excess bromoethane in  
a sealed ampoule gave a cyclic alkylphosphonate, e.g., O,O'-  
diphenyl ethylphosphonate, with a higher mp and relatively more  
stable than the starting phosphite. Structure of the prepared  
compounds was confirmed by NMR and IR spectra. The elemental  
1/2

- 45 -

VERIZHNIKOV, L. V., et al, Zhurnal Obshchey Khimii, Vol 41,  
10, 1971, pp 2162-2164

Analysis data and some physicochemical constants of the synthesized cyclic phosphonates are tabulated, and the experimental procedures employed in their preparation are described.

2/2

USSR

UDC 616.001.28+591.8.434-05

TALAPIN, V. I., CHEVLYTKO, A. A., and MUKOSEY, N. V.

"Condition of Enterochromaffin Cells in Acute Radiation Sickness"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk,  
No 1, 1971, pp 114-116

Abstract: Histochemical studies were conducted to determine shifts in the serotonin content in enterochromaffin cells of random-bred dogs with acute radiation sickness. Acute radiation sickness was induced in the animals by a single irradiation with filtered x-rays in a total dose of 600 rad. The irradiated but untreated animals all perished within 15-21 days after irradiation. The treated dogs were kept under observation for periods of up to five years. Enterochromaffin cells were extracted from transverse sections of the large and small intestines. The survivors were divided into three groups, with group one sacrificed and examined within 3-5 months; group two -- within 6-9

1/2

USSR

TALAPIN, V. I., CHEVLYTKO, A. A., and MUKOSEY, N. V., Izvestiya Akademii Nauk BSR, Seriya Biologicheskikh Nauk, No 1, 1971, pp 114-116

months, and group three -- within 15 months to five years after the beginning of the tests. Practically no enterochromaffin cells were found in the animals perishing from acute radiation sickness, and the number of serotonin granules in those cells which were found was very small. In the animals which survived acute radiation sickness and fully recovered as a result of medical treatment, the complete restoration of enterochromaffin cells saturated with serotonin was observed.

2/2

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--AN ATTACHMENT FOR BORING DEEP HOLES IN VERY HARD MATERIALS -U-  
AUTHOR--(02)-BAYKALOV, A.K., MUKOVGZ, YU.A. *m*  
CCOUNTRY OF INFO--USSR  
SOURCE--KIEV, TEKHNOLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP  
33-34  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--HARD ALLOY, CAST IRON, METAL DRILLING, LATHE, ALLOY  
DESIGNATION, METALLURGIC RESEARCH FACILITY, MACHINE TOOL, BORING  
MACHINE/(U)CHKH12NR2 ALLOYED HARD CAST IRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1330

STEP NO--UR/0418/70/000/001/0033/0034

CIRC ACCESSION NO--AP0123288

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123288

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE AUTHORS PRESENT THE DESIGN OF A BORING ATTACHMENT FOR THE MODEL 163 LATHE WHICH MAKES IT POSSIBLE TO MACHINE HOLES 170-210MM IN DIAMETER AND 1100MM LONG IN PARTS MADE FROM VERY HARD CAST IRON DURING ROUGH AND FINISH BORING WITHIN THE THIRD CLASS OF ACCURACY USING A BORING HEAD. THE ATTACHMENT WAS DEVELOPED AT THE INSTITUTE OF SUPER HARD MATERIALS (INSTITUT SVERKHIVERDYKH MATERIALOV). TABLES ARE GIVEN FOR ADJUSTING THE ATTACHMENT FOR VARIOUS RATES OF FEED. THE GEOMETRY FOR BORING CUTTERS IS GIVEN ALONG WITH CUTTING REGIMES FOR MACHINING THE CHKHI2N7R2 GRADE OF VERY HARD ALLOYED CAST IRON WITH AN HRS OF 60-62. .

UNCLASSIFIED

USSR

VAN FO FY, G. A., and MUKOYED, A. P.

"Stress Distribution Around Recesses in Multisandwich Rotational Shells"

V sb. Armirovan. materialy i konstruktii iz nikh (Reinforced Materials and Structures Made of Them -- collection of works), Kiev, "Nauk. dumka," 1970, pp 79-106 (from RZh-Mekhanika, No 1, Jan 71, Abstract No 1V119 by Ya. F. Kayuk)

Translation: The authors derive systems of resolvents for multisandwich shells weakened by holes. Two cases are considered: a) a rigid three-sandwich shell; b) multisandwich shells composed of an arbitrary number of orthotropic layers of varying thicknesses. In case (a) isotropy of all three layers is assumed, with supporting layers having the same physicomachanical characteristics; linear thickness displacement law is also assumed in all layers. If three stress functions are introduced in a specific manner, it is possible to write a system of four partial equations to describe the stress and strain field in the shell. The fundamental equations and the solutions are described in detail for the case of a spherical shell with circular and elliptical holes. In case (b) it is assumed that the hypothesis of a normal

1/2

- 68 -



USSR

VAN FO FY, G. A., and MUKOYED, A. P., V sb. Armirovan. materialy i konstruktaii iz nikh, Kiev, "Nauk. dumka," 1970, pp 79-106

element for the shell sandwich as a whole is valid. Given certain relations between mechanical characteristics, a system of complex stress equations for sandwich-type shells is obtained. In the case of cylindrical shallow shells of revolution these systems can be reduced to resolvents. For rotational shells with a hole at the pole the method of asymptotic integration of fundamental equations is suggested. Values of stress concentration factors are calculated for a spherical ellipsoidal shell with a circular hole at the pole. Bibliography with 20 titles.

2/2

USSR

UDC 612.111.3.014.482

LUZANOV, V. M. and MUKSINOVA, K. N., Institute of Biophysics, Ministry of Health USSR

"Erythropoietic Activity of the Blood During Fractional Irradiation"

Moscow, Meditsinskaya Radiologiya, No 2, 1971, pp 52-55

Abstract: Wistar rats were exposed to 50 r (dose rate 12.5 r/min) daily until total doses of 150, 250, 500, 1,000, 1,500, and 2,000 r were achieved. The erythropoietic activity of the blood was determined in experimental and control animals on a model of polycythemic rats. Erythropoietic activity began to increase from the very first day of exposure and at total doses of 1,000 to 2,000 r it exceeded the control values 7- to 17-fold. There was a clear-cut relationship between the shifts in erythropoiesis and myelopoiesis. The increase in plasma erythropoietic activity was accompanied by an increase in the number of normoblasts in bone marrow and an intensification of their mitotic activity. It was postulated that these phenomena are largely due to change in the nature of humoral regulation of erythropoiesis, after irradiation. The intensification of erythropoietic activity helps to maintain the erythrocyte balance for a considerable period despite the steady decrease in the total number of bone-marrow cells.

1/2 006 UNCLASSIFIED PROCESSING DATE--30 OCT 70  
TITLE--FUNCTIONING OF DONOR DNA FROM ESCHERICHIA COLI IN RECIPIENT  
SPHEROPLASTS OF REC PRIME POSITIVE AND REC PRIME NEGATIVE STRAINS OF  
AUTHOR--(02)--RUDDENKO, U.N., MULCHANOV, M.I.

COUNTRY OF INFO--USSR

SOURCE--GENETIKA 1970, 6(1), 111-20

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ESCHERICHIA COLI, BACTERIAL DEOXYRIBONUCLEIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/0595

STEP NO--UR/0473/TO/006/001/0111/0120

CIRC ACCESSION NO--AP0122716

UNCLASSIFIED

2/2 006  
CIRC ACCESSION NO--AP0122716

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DNA OF PROTOTROPIC E. COLI STRAINS INDUCED THE INCORPORATION OF PRIME14 C-LABELED AMINO ACIDS INTO THE SPEROPLASTS OF AUXOTROPIC E. COLI STRAINS GROWN IN MINIMAL MEDIUM. THE INCORPORATION IN THE PRESENCE OF DNA REACHED THE INCORPORATION LEVEL IN THE FULL MEDIUM AND SOMETIMES EXCEEDED IT. ONLY DNA ISOLATED FROM STRAINS PROTOTROPIC TO THE GROWTH FACTOR LACKING IN THE MINIMAL MEDIUM INDUCED THE INCORPORATION. THE INCORPORATION WAS SUPPRESSED BY CHLORAMPHENICOL AND ACTINOMYCIN D. THE SPEROPLAST ABILITY TO SYNTHESIZE THE PROTEIN IN MINIMAL MEDIUM INDICATED THAT THERE WERE FUNCTIONING DONOR DNA GENES FOR THE SYNTHESIS OF AMINO ACIDS LACKING. THE SPEROPLASTS OF REC PRIME POSITIVE AND REC PRIME NEGATIVE STRAINS OF E. COLI UNDER THE INFLUENCE OF DONOR DNA INCORPORATED EQUALLY EFFECTIVELY THE LABELED AMINO ACIDS INTO THEIR PROTEIN. IT WAS SUGGESTED THAT THE DONOR DNA FUNCTIONED AUTONOMOUSLY WITHOUT THE INTEGRATION INTO THE RECIPIENT CHROMOSOME. FACILITY: GAMALEI INST. EPIDEMIOLOG. MICROBIOL., MOSCOW. USSR.

USSR

RAYZER, Yu. P., MUL'CHENKO, B. F., EPSTEIN, V. A., Institute of Problems in Mechanics, USSR Academy of Sciences

"Investigation of a High-Pressure Laser Spark Ignited by an Extraneous Plasma Source"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, December, 1970, pp 1975-82

Abstract: A laser spark in argon at pressures up to 80 atm is ignited by an extraneous plasma source, the intensity of the supporting radiation far below the breakdown threshold. The threshold power of the radiation from a ruby laser required for maintaining the plasma is determined for pressures ranging from 16 to 80 atm and is found to lie between 70 and 10 kw. The plasma temperature (18 000-33 000°) and other parameters are measured. The results are in agreement with the theoretical calculations.

1/1

- 95 -

Acc. Nr: **AP0043765**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy  
Fiziki, 1970, Vol 58, Nr 3, pp 794-795

OBSERVATION OF AN EXTENDED LIGHT SPARK

B. Ya. Zeldovich, B. F. Mulchenko, Pilipetskiy, N. F.

An extended light spark was observed in argon in the field of laser radiation focused by a conical lens. Breakdown developed along the extended axial caustics. Some possible applications of conical focussing of light beams, including those involved in breakdown formation, are indicated.

REEL/FRAME  
19770172

USSR

NALIMOV, V. V., MUL'CHENKO, Z. M.

"The Problem of Logic-Linguistic Analysis of the Language of Science"

Probl. Struktural. Lingvistiki 1971 [Problems of Structural Linguistics 1971 -- Collection of Works], Moscow, Nauka Press, 1972, pp 534-554  
(Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V893 by A. Muchnik).

Translation: When science is studied as an information process together with the scientological approach, the authors emphasize the role of a new approach, based on the study of the language of science. They indicate the difficulties arising due to the great differentiation of scientific disciplines, the large number of local languages, hindering information exchange between sciences and particularly between science and technology. A tendency is also noted toward the creation of metalanguages, i.e., languages used in narrow areas of knowledge. Their peculiarities, advantages and disadvantages are noted. (examples include the "meta-language" of mathematical statisticals, information theory, etc.). It is suggested that heuristicity be used as a criteria for selection of a meta-language (but not adequacy, which does not allow new phenomena to be predicted).

1/3

- 86 -

USSR

NALIMOV, V. V., MUL'CHENKO, Z. M., Probl. Strukturn. Lingvistiki 1971, Moscow, Nauka Press, 1972, pp 534-554.

Polymorphism is studied (i.e., ambiguity and uncertainty, approximate-ness) as represented in human language and scientific language which should overcome the limits of strictly deductive thinking related to the theorem of incompleteness. Polymorphism itself is related to ambiguity and approxi-mateness in the models used for complexly organized systems (in contrast to physical models). The philosophical prerequisites of these concepts lie in the fact that "science is a developing system," allowing the existence of a hierarchy of forms of thinking: 1) prelogical pattern thinking; 2) logical and 3) superlogical thinking (in which a complex system of limita-tions and selection rules plays a significant role).

Ambiguity of representation of results of observations stimulates development of computer technology, which is illustrated by an example from statistics. A tendency is noted toward increased semantic capacity of special languages -- systems of codes, facilitating the exchange of in-formation in narrow areas of knowledge, but still more hindering exchange across the broad front of science.

The final section is dedicated to problems of construction of a lin-guistic theory of information, informatics, called upon to overcome the information crisis in science. It is noted that, together with problems of storage and retrieval of information, "a more complex and important pro-blem is assimilation of publications on a given theme" and "consultation"

2/3



USSR

NALIMOV, V. V., MUL'CHENKO, Z. M., Probl. Struktural. Lingvistiki 1971, Moscow, Nauka Press, 1972, pp 534-554.

using computers in the dialogue mode. New forms of information service are suggested -- creation of specialized consultation centers, as well as preparation of polyglots of science. 26 Biblio. Refs.

3/3

- 87 -

MULCHENKO, Z.M.

Cybernetics

31 Mar 71

40

PHOTOGRAPHIC

26. USSR

MC

AC

NALTOV, V. V., MULCHENKO, Z. M.

UDC: 51.059.001.57.012.01

"Comparative Study of Two Self-Organizing Systems -- Science and the Biosphere"

Adaptivnaya, samoorganizatsiya, [adaptation, self-organization -- Collection of Works, Moscow, Nauka Press, 1970, pp 279-301, (Translated from RZh Kibernetika, No 12, 1970, Abstract No 125330).

Translation: Science is studied as a self-organizing system of matter as a macroprocess developing according to a certain system of rules. These rules are themselves developing and changing together with the development of the macroprocess itself. During performance of the investigation, a comparison is drawn with another developing macroprocess -- the biosphere of the earth.

1/1

Sci Foreign Press Digest  
31 MAR 71

27. USSR

YUDIN, B. O.

"The Concept of Completeness in the Structure of Scientific Knowledge"

Moscow, Voprosy Filozofii, No 12, 1970, pp 81-92

Abstract: Problems related to the principles of the investigation of complete objects are one of the points of interaction of the interests of the concrete sciences and philosophy. The problem of completeness has been broadly discussed in the Soviet philosophical and biological literature. In the present article, the author analyzes some problems arising in the process of investigation of complete objects. Primary interest is in the influence of acceptance or rejection of the assumption of completeness on the course of investigation.

1/1

USSR

UDC: 669.295.053.4

PUTILIN, Yu. M., MULDAGULOVA, A. D.

"Determination of the Degree of Conversion of Ilmenite in Concentrates"

Tekhnol. Mineral'n. Syr'ya [Technology of Mineral Raw Materials -- Collection of Works], Alma-Ata, 1972, pp 26-32 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G213, by G. Svodtseva).

Translation: The basic indicators of the degree of conversion of ilmenite are: the increase in the content of Ti in the form of rutile, the predominance of the -ide form of Fe over the -ous form, the low specific gravity, high temperature of beginning of interaction with  $H_2SO_4$  and low extraction of Ti into the solution during sulfatizing. Ilmenite of the Prognoznoye deposit is slightly converted. The extraction of Ti when it is sulfatized is 92%. Concentrates from Obukhovskoye and Kum-Kol'skoye deposits are strongly converted. Only 65-70% of the Ti from these concentrates goes into solution. When the unconverted concentrate from the Kusinskoye deposit is decomposed, the extraction of Ti into solution is 96%. 5 tables.

1/1

- 16 -

I/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--MECHANISM OF A REVERSIBLE FAVORSKII REACTION, II. ALKALINE  
SPLITTING OF O-DEUTERATED METHYLETHYL, PHENYLETHINYL, CARBINOL AND  
AUTHOR--(04)-SHCHELKINOV, A.V., MULDAKHMETOV, Z.M., RAKHIMZHANOVA, N.A.,  
FAVORSKAYA, I.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 930-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL REACTION MECHANISM, ALKYNE, IR SPECTRUM,  
SPECTROSCOPIC ANALYSIS, KETONE, ALCOHOL, ISOTOPE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1324 STEP NO--UR/0365/70/006/005/0930/0935  
CIRC ACCESSION NO--AP0134596

UNCLASSIFIED

272 026 UNCLASSIFIED PROCESSING DATE--20NDV7C  
CIRC. ACCESSION NO--AP0134998  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF MECOET WITH DC  
TRIPLE BOND CPH IN THE PRESENCE OF KOD GAVE HC TRIPLE BOND CPH, ETCUCH  
SUB2 D (I), AND MECHDOCH SUB2 D (II). THE DISTRIBUTION OF D IN THE  
PRODUCTS, OBTAINED BY DETD. D. OF WATER FROM THE ANAL. COMBUSTION; AND  
IN SPECTROSCOPY DEFINE THE PATHWAY. FACILITY: KHM.-MET. INST.,  
ALMA ATA. USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--040EC70  
TITLE--ON THE TOXICOLOGICAL EVALUATION OF CHLORAL IN THE PROCESS OF ITS  
LIBERATION DURING FILLING AND POURING OF FOAM POLYURETHANS -U-  
AUTHOR-(03)-BOYTSOV, A.N., ROTENBERG, YU.S., MULENKOVA, V.G. M

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA, 1970, NR 6, PP  
26-29  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ALDEHYDE, POLYURETHANE RESIN,  
TOXICITY, FOAM PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/1129

STEP NO--UR/0391/70/000/006/0026/0029

CIRC ACCESSION NO--AP0130161

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130161

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHLORAL (TRICHLOROETHANAL) IS WIDELY USED IN VARIOUS BRANCHES OF INDUSTRY (DDT SYNTHESIS, PRODUCTION OF SOLID FOAM POLYURETHANS FPU ETC.) WHILE FILLING AND POURING FPU OF THE 244H AND 100-66 GRADES THE RELEASE OF CHLORAL FUMES INTO THE ATMOSPHERE IS THE BASIC SOURCE OF ENVIRONMENTAL POLLUTION. BY READILY INCORPORATING WATER CHLORAL FUMES BECOME PRACTICALLY INSTANTANEOUSLY TRANSFORMED INTO CHLORAL HYDRATE (CH) WHICH IS A COMPOUND OF MODERATE TOXICITY (WITH ITS INTRAGASTRIC INTRODUCTION TO ALBINO MICE THE LD SUB50 EQUALS 710 MG-KG AND LC SUB50 MINUS 32 MG-1). IN CHRONIC TESTS THE CH FUMES CONCENTRATION OF 0.66 MG-1 PRODUCES RETARDED WEIGHT GAIN, PHASIC CHANGES IN THE CNS EXCITABILITY AND IN THE ARTERIAL PRESSURE, LEUCOCYTOSIS AND DIMINUATION OF THE ALBUMIN GLOBULIN RATIO IN THE ANIMALS. CH FUMES CONCENTRATION OF 0.22 MG-1 PROVOKED IN THEM BUT A TENDENCY TOWARDS A SHIFT OF THE SAME VALUES. A CONCENTRATION OF 10 MG-M PRIME3 (CALCULATED TO THE VALUE OF CHLORAL) HAS BEEN APPROVED AS A MAXIMUM PERMISSIBLE ONE FOR CHLORAL FUMES AND CH. FACILITY: TSENTRAL'NYI INSTITUT USOVERSHENSTVOVANIYA VRACHEY, MOSKVA GORODSKAYA SANEPIIDSTANTSIIA.

UNCLASSIFIED

USSR

UDC 577.37

CHUZMADZHEV, YU. A., MULER, A. L., and MARKIN, V. S., Institute of Electrochemistry

"Conformation Model of Excitable Cell Membranes. I. Ionic Permeability"

Moscow, Biofizika, No 6, 1972, pp 1,012-1,016

Abstract: The authors propose a model of a cell membrane consisting of globular lipoproteins forming a dimeric lattice. The model shows the relationship between membrane conductivity and concentration of bivalent ions in an external solution and the membrane potential. This relationship satisfactorily explains the steep increase in sodium conduction from the potential  $g_{Na}(\varphi)$  and the shift of the curve  $g_{Na}(\varphi)$  to the right along the axis of the potentials when the concentration of  $Ca^{++}$  in the external solution is increased. The model is in good quantitative agreement with the experimental data.

1/1

- 2 -



USSR

UDC 621.375.82

ZUBAREV, I. G., MULIKOV, V. F.

"Single-Frequency, Neodymium Glass Lasers in Non-Spiking, Free Oscillation Mode and in the Mode with Modulated Q-factor"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 3, Moscow, Soviet Radio, 1972, pp 13-17 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D915)

Translation: Oscillation of a Nd-glass laser with a broad radiation line  $\leq 5 \cdot 10^{-3} \text{ cm}^{-1}$  operating in the non-spiking free oscillation mode with a pulse duration of  $\sim 700$  microseconds was obtained. The radiation energy with a triple increase in pumping above the threshold value is equal to  $\sim 30$  joules. The radiation of this laser was used to capture the radiation of another Nd-glass laser with modulated Q-factor. The modulation of the Q-factor was realized by a rotating prism. Here, the second laser emitted single pulses with a duration of 30 nanoseconds, an energy of 0.4 joules, and a line width of  $7 \cdot 10^{-3} \text{ cm}^{-1}$ . The natural line width of the laser radiation with modulated Q-factor was  $\sim 14 \text{ cm}^{-1}$ . The bibliography has 9 entries.

1/1

- 26 -

USSR

UDC: 621.373:530.145.6

GRASYUK, A. Z., ZUBAREV, I. G., MULIKOV, V. F.

"Stretching a Giant Pulse of a Neodymium Glass Laser by Means of the Forced Raman Scattering Effect in Liquid Nitrogen"

Kratkiye soobshch. po fiz. (Brief Reports on Physics), 1971, No 2, pp 27-31  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D162)

Translation: The authors report on use of the method of stretching a pulse of Q-switched laser emission by introducing nonlinear losses into the cavity thanks to forced Raman scattering in a neodymium laser. Silicate and phosphate glass rods were used as the active media. Pulse stretching was achieved only for a phosphate glass laser, which yields a considerably narrower emission spectrum. A comparison of experimental data shows that introducing a cell with liquid nitrogen into the cavity causes stretching of each of three initial pulses until they merge into a single pulse, which is due to cessation of amplification in the pulse peak region as a consequence of nonlinear losses with continued amplification of the pulse edges. A. K.

1/1

UDC 691.87-417:620.172

USSR

MULIN, N. M., and MESHKOV, V. Z., Moscow Scientific Research Institute of Concrete and Reinforced Concrete

"Mechanical Properties of Hot-Rolled Reinforcing Steels at Low Temperatures"

Kiev, Problemy Prochnosti, No 8, Aug 70, pp 115-118

Abstract: Data on the mechanical properties of reinforcing steels of periodical profile are presented on the basis of tests conducted on Manager and full-scale samples. Experimental techniques for studying the sensibility of reinforcing steel to stress concentration in relation to temperature and stress concentrator location are described. Tests were conducted on five brands of steel: St5ap, 10GT, 35GS, 80S, and 23Kh2G2T. Their chemical compositions and mechanical properties are given in a table. The results of tests with man-made stress concentrators showed that the presence of a cut does not affect the strength properties of samples at room temperature, while a decrease (10-21%) in short-time strength was observed with 35GS and 80S steels at low temperature (-60°). The steels are classified into three groups, according to the effect of stress concentration.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--CHYLTHORAX AND CHYLOPERITONEUM IN CHILDREN -U-  
AUTHOR--(03)-DELETSKIY, S.YA., OVCHINNIKOV, A.A., MULINA, TS.I.  
CCUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 6, PP 88-94  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PEDIATRICS, LYMPHATIC SYSTEM, SURGERY, DIAGNOSTIC MEDICINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1776 STEP NO--UR/0531/70/000/006/0088/0094  
CIRC ACCESSION NO--AP0129144

2/2 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0129144

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER OBSERVATION WERE SEVEN CHILDREN, AGED FROM 4 AND ONE HALF MONTHS TO 11 YEARS, SUFFERING FROM DEFECTS OF MAJOR LYMPHATIC VESSELS. CHYLOTHORAX IN THREE PATIENTS, CHYLOPERITONEUM, IN TWO AND IN TWO CHILDREN THERE WAS A COMBINATION OF THESE AFFECTIONS. THE CAUSE OF LYMPHORRHAGIA WAS AS FOLLOWS: MALFORMATION OF THE LYMPHATIC SYSTEM (IN 2 PATIENTS), BIRTH INJURY (IN ONE CASE), INJURY OF THE LYMPHATIC DUCT DURING THE OPERATION (IN 2 CASES), AN INFLAMMATORY PROCESS (IN 2 CASES). THREE CHILDREN WERE OPERATED UPON. IN TWO OF THEM THE CAUSE OF LYMPHORRHEA WAS REVEALED AND ELIMINATED BY LIGATION OF THE LYMPHATIC DUCT. FOUR PATIENTS WERE CURED BY REPEATED PLEURAL PUNCTURES. IN THE AUTHORS' OPINION THE INEFFECTICACY OF CONSERVATIVE TREATMENT OF CHYLOTHORAX AND CHYLOPERITONEUM IN CHILDREN SERVES AS AN INDICATION TO OPERATIVE INTERVENTION. THE METHOD OF CHOICE IS LIGATION OF THE LYMPHATIC VESSEL ABOVE AND BELOW THE SITE OF LYMPHORRHAGIA. FACILITY: KAFEDRA DETSKOY KHIRURGII TSIU, MOSKVA.

Miscellaneous

UDC 621.771.23

USSR

ZELICHENOK, B. Yu., VINOGRADOVA, A. I., MEDVEDEV, V. V., MUL'KO, G. N.  
and KATRICHENKO, K. P.

"Factors Affecting the Expenditure of Metal in Sheet Rolling"

Moscow, Stal', No 2, Feb 71, pp 139-142

Abstract: This article reports on mathematical and statistical analyses made at the Orsko-Khalilov Metallurgical Combine of the factors determining variations in sheet steel lengths. Personnel of the plant have also computed the probability of obtaining ordered sheet lengths so that they can make an optimal choice of slab weights for their type-2800 thick-sheet mill. The finished sheets of 17G1S steel are 12.5 mm thick, 1.88 meters wide, and 12.1 meters long. To suit the welding procedures at the Chelyabinsk Tube-Rolling Plant to which they are sent to be welded into tubes of 1220-mm diameter for carrying gas, however, the lengths of these sheets may be 11.9, 11.5 or 11.3 meters. The article offers formulas and statistical data for computing the proper sheet lengths and other production parameters.

1/1

AZIMOV, S. A., MYALKOVSKIY, V. M., NURITDINOV, Kh., RABULKULOV, M. S.,  
ABDULLAYEV, A. M., BEYSENBAYEV, R. U., GAVRILIN, Ye. V., TALIPOV, D. A.,  
MULLAZHONOV, E. Zh., TILLAYEV, T., RAKHMANOV, Zh., UMEROV, R.,  
\*OLEINIKOV, V. A., KHEN, E., YULDASHEV, T. S., Institute of Nuclear  
Physics of the Academy of Sciences Uzbek SSR

"Study of the Characteristics of High-Energy Interactions of Pions and  
Nucleons"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 36,  
No. 8, Aug 72, pp 1626-1631

Abstract: Experimental data obtained at the Kum-Bel' High-Altitude  
Station of the Physicotechnical Institute of the Academy of Sciences  
Uzbek SSR are reported. The station is 3200 m above sea level. The  
setup contains three series of wide-gap spark chambers with effective  
areas of 2 m<sup>2</sup> placed above and below the target. The Cerenkov spectro-  
meter with total absorption and an ionization calorimeter with an area of  
10 m<sup>2</sup> were used to measure the primary energy  $E_0$ . Up to the present time  
experimental data obtained over 630 hours of operation of the device have  
been processed, with a high-voltage pulse being supplied to the electrodes of  
the spark chambers. Showers with an energy of  $>200$  Gey generated in the target  
were selected for analysis. The following ratio was obtained for the number  
1/2

USSR

AZIMOV, S. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 36, No 8, Aug 72, pp 1626-1631

of primary charged  $N_c$  and neutral  $N_n$  particles:  $N_c/N_n = 2.3 \pm 0.3$ ; this shows that the proportion of charged particles is ~34% of all nuclear active particles, thus making it possible to study pion-nuclear collisions by comparing the characteristics of the interaction of charged and neutral primary particles. A weak functional dependence between the inelasticity coefficient  $\langle K_{ne} \rangle$  and the atomic number of the target nucleus and a strong functional dependence between this coefficient and the nature of the primary particles were obtained for interactions of hadron with  $E_0 > 200$  GeV.  $\langle n_s \rangle$  is almost a logarithmic function of  $E_0$ . The average multiplicity in the interaction of pions with neutrons in paraffin is identical within the experimental limit. A considerable azimuthal effect was observed for the angular distribution of secondary particles. The azimuthal effect has its greatest value for showers with  $n_s = 8-15$ , or a multiplicity close to average.



USSR

AZIMOV, S. A., BEYSEMBAYEV, R. U., MULLADZHANOV, E. ZH.,  
CHUDAKOV, V. M., YUDASHBAYEV, T. S., Institute of Nuclear  
Physics, Academy of Sciences, Uzbek SSR

"Azimuthal Relations and Fireballs"

Moscow, Yadernaya Fizika, Vol 11, No 6, 1970, pp 1248-1254

Abstract: Azimuthal correlations are detected in nuclear inter-  
actions at energies of hundreds of Gev. From the point of view  
of a model of a single fireball, the cause of the correlations  
may be its formation and "rotation."

1/1

USSR

UDC: 621.370.55(088.8)

MULLAGALIYEV, A. M.

"A Device for Shaping Pulses With Amplitude-Time Modulation"

USSR Author's Certificate No 278745, filed 9 Jun 69, published 3 Dec 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D326 P)

Translation: A device is proposed for shaping pulses with amplitude-time modulation. The device contains a multiple-tap delay line with diode selectors in the tap circuit. To simplify the equipment by eliminating active elements, resistors in values determined by a given law of amplitude-time modulation are connected in series with the diodes which are tied to the taps of the delay line along with capacitors which sum the signals from each diode selector across the load resistor. V. P.

1/1

- 79 -

AAO 043466

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/2

M

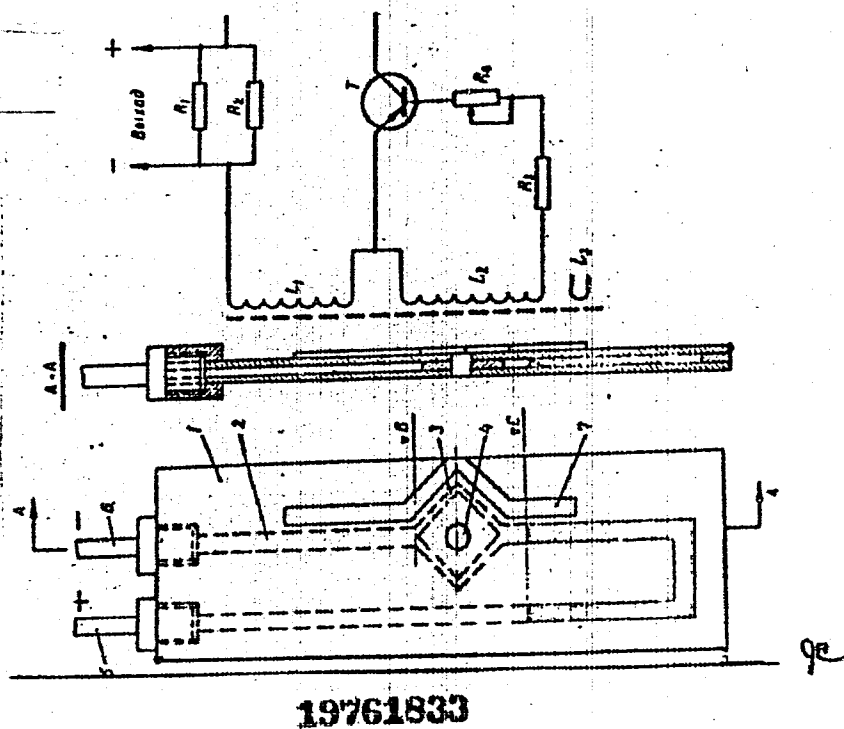
242435 LEVEL METER suitable for rapid and accurate control of liquid consumption and particularly suitable for use in conjunction with pipelines, comprises a mercury manometer 2 and an electronic generator with a ferrite core 4. One of the manometer arms includes a closed loop 3 in which the core 4 is fitted.  
7.2.68 as 1216379/18-24 M. MULLAKHMETOV (8.9.69)  
Bul 15/25.4.69. Class 42e. Int. Cl. G 01f.

1/2

21

19761832

AA0043466



2/2

19761833

1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--CLOUD BRIGHTNESS, REVIEW OF A COMPLEX STUDY --U-  
AUTHOR--(04)--ROZENBERG, G.V., ILICH, G.K., MAKAREVICH, S.A., MULLAMAA,  
YU.R.  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, FIZIKA ATMOSFERY I OKEANA, VOL. 6,  
MAY 1970, P. 445-467  
DATE PUBLISHED--MAY70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--LIGHT SCATTERING, OPTIC BRIGHTNESS, ATMOSPHERIC CLOUD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605011/F06 STEP NO--UR/0362/70/006/000/0445/0467

CIRC ACCESSION NO--AP0140230

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE PROPERTIES OF SOME VERY GENERAL ASYMPTOTIC FORMULAS, FOR THE BRIGHTNESS OF THICK LAYERS OF LIGHT SCATTERING MEDIA, WHOSE CORRECTNESS WAS DEMONSTRATED BY PREVIOUS EXPERIMENTS. THE FORMULAS ARE USED IN CALCULATING THE CLOUD BRIGHTNESS AS A FUNCTION OF CLOUD PARAMETERS, ILLUMINATION, AND CONDITIONS OF THE UNDERLYING SURFACE. AN ANALYSIS OF EXTENSIVE EXPERIMENTAL DATA AND CALCULATIONS INDICATE THE EXISTENCE OF A RELATION BETWEEN THE MACROOPTICAL PARAMETERS OF CLOUDS AND THEIR MICROSTRUCTURE. A METHOD IS PROPOSED FOR DETERMINING THE EFFECTS OF THE SPATIAL STRUCTURE OF CLOUDS ON THEIR BRIGHTNESS CHARACTERISTICS AS A FUNCTION OF THE DIMENSIONS OF THE VISUAL FIELD. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT FIZIKI ATMOSFERY, MOSCOW, USSR. FACILITY: AKADEMIIA NAUK BELORUSSKOI SSR, INSTITUT FIZIKI, MINSK, BELORUSSIAN SSR; AKADEMIIA NAUK ESTONSKOI SSR, INSTITUT FIZIKI I ASTRONOMII, TARTU, ESTONIAN SSR.

UNCLASSIFIED

USSR

UDC 519.2

MULLAT, I.

"A Class of Absorbing Markov Chains"

Izv. AN EstSSR. Fiz. Mat. (News of the Estonian SSR Academy of Sciences, Physics and Mathematics), 1972, Vol 21, No 3, pp 294-296 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V45)

Translation: A study was made of a class of absorbing Markov chains with a single ergodic state. By analogy with the concept of forbidden states (see Chzhun Kay-Lay, Odnorodnyye tsepi Markova (Homogeneous Markov Chains), Moscow, 1964), the concept of forbidden transitions in a unit time is introduced. The concept of forbidden transitions is used to establish the relations between the elements of the fundamental matrix of the chain with forbidden transitions. It is necessary to note that the presented relations were the basis for the efficient algorithm for solving classification problems in pattern recognition written at the Computation Center of the Tallin Polytechnic Institute.

1/1

USSR

UDC: 51

MILLAT, I. E.

"A Principle of the Maximum for Some Functions of Sets"

Tr. Tallin. politekhn. in-ta (Transactions of the Tallin Polytechnical Institute) No 313, 1971 A, pp 37-44 (from RZh---Matematika, No 8, 1972, Abstract No 8V542)

Translation: The author considers the problem of finding the extremum of a function defined in all subsets of a given finite set. An algorithm is proposed for constructing extremal sets to be used for solving problems in object classification. It can also be used for solving graph problems, in revealing the "connections," in some sense, of subsets of the graph's vertices, for example. A similar type of problem was investigated in several works by Cherenin, and by Cherenin and Khachaturov, based on the method of successive computations of Cherenin (RZhMat, 1965, 2V410K; 1964, 11V261; 1966, 1V271, 1V272; 1967, 8V296).

1/2



USSR

MULLAT, I. E., Tr. Tallin. politekhn. in-ta, No 313, 1971 A, pp 37-44

Let  $\{H\}$  be a set of the subsets in some finite set  $M$ . It is assumed that for each  $H \in M$  some function  $P_H$  of its elements is specified. We shall call the totality of  $\{P_H\}$  a system of weights in set  $H$ . The basic assumptions regarding the system of weights are: 1) The weight  $P_H(a)$  of the element  $a \in H$  is a real number. 2) If  $a \in H$  and  $b \in H \setminus a$ , then  $\pi_{H \setminus a}(b) \leq \pi_H(b)$ . In addition, the following function is examined:

$$f(H) = \min_{a \in H} P_H(a), \quad H \in M. \quad (1)$$

The principle of the maximum is formulated for functions of type (1). The principle is formulated in the language of some sequences of subsets in set  $M$ . An algorithm is then presented which is based on the principle of the maximum. The algorithm has been used in practice for one problem in graph theory. Yu. Finkel'shteyn

2/2

USSR

UDC: 51

MULLAT, I. E.

"Concerning a Principle of the Maximum for Certain Functions of Sets"

Tr. Tallin. politekhn. in-ta (Works of Tallin Polytechnical Institute), 1971, A, No 313, pp 37-44 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V542)

Translation: The paper deals with the problem of finding the extremum of a function defined on all subsets of a given finite set. The proposed algorithm for constructing extremum sets is used for solving certain problems in classifying objects. The algorithm can also be used for solving some problems on graphs, such as determining the subsets of the vertices of a given graph which are "connected" in some sense. Problems of this type have been studied in a number of papers by Cherenin and Cherenin, and by Khachaturov on the basis of the method of successive calculations proposed by Cherenin (RZhMat 1965, 2V410K; 1964, 11V261; 1966, 1V271, 11V272; 1967, 8V296).

1/2

USSR

MULLAT, I. E., Tr. Tallin. politekhn. in-ta, 1971, A, No 313, pp 37-44

Let  $\{H\}$  be the set of subsets of some finite set  $M$ . It is assumed that for each  $H \in M$ , some function  $P_H$  of its elements is given. The aggregate  $\{P_H\}$  is called a system of weights on set  $H$ . The principal assumptions made relative to systems of weights are: 1) The weight  $P_H(a)$  of an element  $a \in H$  is a real number. 2) if  $a \in H$  and  $b \in H \setminus a$ , then  $\pi_{H \setminus a}(b) < \pi_H(b)$ . The following function is then considered

$$I(H) = \min_{a \in H} P_H(a), \quad H \in M. \quad (1)$$

A principle of the maximum is formulated for functions of type (1). The principle is formulated in the language of certain sequences of elements of the set  $M$  and sequences of subsets of the set  $M$ . An algorithm is then given which is based on the principle of the maximum. The algorithm was used for a practical problem from the theory of graphs. Yu. Fin-  
kel'shteyn.

2/2

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--QUANTITATIVE DETERMINATION OF CARBON, HYDROGEN, SULFUR, AND OXYGEN  
IN ORGANIC COMPOUNDS BY IR SPECTROSCOPY -U-  
AUTHOR-(02)-OBTEMPERANSKAYA, S.I., MULLAYANOV, F.I. *M*  
COUNTRY OF INFO--USSR  
SOURCE--VESTN. MOSK. UNIV., KHIM. 1970, 11(1), 118-19  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--IR SPECTROSCOPY, CARBON, HYDROGEN, SULFUR, OXYGEN,  
QUANTITATIVE ANALYSIS, ORGANIC CHEMISTRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/1474 STEP NO--UR/0189/70/011/001/0118/0119  
CIRC ACCESSION NO--AP0120261  
UNCLASSIFIED